Curriculum Vitae

Yuancheng Xu

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EDUCATION

Southern University of Science and Technology, China *2016-Present*
Major in Mathematics and Applied Mathematics
GPA 3.94/4.00 (ranking: 1/48)

New York University *Spring, 2019*
Visiting Student at the Courant Institute of Mathematical Sciences
GPA 4.00/4.00 (including two PhD-level courses)

RESEARCH EXPERIENCE

Prof. Christina Ramirez's Group (Statistics and Machine Learning) June,2019 – Present

Cross-disciplinary Scholars in Science and Technology (CSST) *UCLA, Biostatistics Department*

- Designing FREEtree which selects features more unbiasedly by first screening within each cluster of features and then select them among clusters using Linear Mixed-Effect Model Tree (LMM tree). If no natural choices for regressors are available, LMM trees regress on dominant principal components of each correlated cluster. Finally, it uses selected features as both splitters and regressors to fit an LMM tree for prediction.
- Simulation of FREEtree on datasets that includes random effect and treatment-time interaction. FREEtree outperforms other tree-based methods for longitudinal setting such as RE-EM tree and Glmertree in terms of prediction, and successfully recovers the underlying time-treatment structure and true important features.
- Adapting Weighted correlation network analysis (WGCNA) to longitudinal dataset by using distance measure of time series such as dynamic time warping (DTW).
- Working paper: FREEtree: A Tree-based Approach for High Dimensional Longitudinal Data With Correlated Features.

Prof. Sukbin Lim's Lab (Computational Neuroscience) June – Sep,2018

Undergraduate Research program *NYU Shanghai, Neuroscience Department*

- Using the theory of differential equations to derive conditions for persistent activity in both parametric and spatial neural networks.
- Simulation of negative derivative feedback control model that attains persistent firing rate in the absence of stimulus using high-performance computing resources.
- Investigating spike-timing dependent plasticity (STDP) rule that can lead to persistent neural activity in parametric networks.

WORKSHOPS

Seminar on Convex Optimization (Supervisor: Prof. He Bingsheng) Sep 2019-present

- Learning topics on convex optimization including variational inequality framework, ADMM, ALM and PPA algorithms.

Workshop on Mean Field Games (Supervisor: Prof. XIONG Jie) Oct 2019-present

- Reading "Probabilistic Theory of Mean Field Games with Applications I" (René Carmona, François Delarue) and lecture notes on Mean Field Games.

Prof. He Bingsheng's Group (Optimization) Feb 2018
Seminar on image processing *SUSTech, Mathematics Department*

- Learning how to develop mathematical models on graph denoising and graph restoring.
- Using optimization methods such as the alternating direction method of multipliers (ADMM) algorithm to solve the established model.

SELECTED AWARDS

China National Scholarship (0.2%, Highest honor of Chinese undergraduate students)	2019
Outstanding Undergraduate Scholarship (First Prize, 5%)	2017, 2018
Outstanding Freshmen Scholarship	2016
National Mathematical Olympiad (National Second Prize)	2015

STANDARD TESTS

GRE General Test	336+4.0 (166 V, 170 Q, 4.0 AW)	Sep 2017
TOEFL Test	108 (30 R, 27 L, 24 S, 27 W)	Aug 2019

COMPUTATIONAL SKILLS

Python, MATLAB, R, JAVA, C, LaTeX, HTML.

TEACHING

Linear Algebra, Tutorial Session (in English, for non-Chinese students) Fall 2018